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AUTHOR	Spurgeon, Sheila; Bowen, James L.
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ABSTRACT

This research examined the effects of a process of digital video editing used to create multimedia portfolio has on the quality of teacher candidates' critical reflections. The target population was Northwestern Oklahoma State University teacher candidates. Subjects were 22 student teachers in the fall 2001. Subjects were randomly assigned to one of three groups: control, experimental-reflection, and experimental-reflection with multimedia production. The instrument used to measure the dependent variable, teacher candidate's critical reflections, was based on a seven-part framework developed by Sparks-Langer, Simmons, Pasch, Colton, & Starko (1991). The data were analyzed using three separate t-tests for independent samples. Although the difference between each of the pairs of groups was not significant the large difference between the control group and the experimental group (reflection/video ed) is encouraging. (Author/AEF)

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Digital Video/Multimedia Portfolios as a Tool to Develop Reflective Teacher Candidates

Sheila Spurgeon and James L. Bowen

Northwestern Oklahoma State University

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Abstract

The International New Teacher Assessment and Support Consortium (INTASC), and the National Council of Accreditation of Teacher Education (NCATE) have set standards that call for teacher candidates to not only be "reflective practitioners" but also to demonstrate the ability to reflect. (NCATE, 2001) If reflection, as Kitchener (1983) and others (Bowen, 1989; Brabeck, 1984; Mines, 1980) have argued, entails cognitive development and the assumptions a person makes about knowledge, then what teacher educators are assessing in candidates portfolios is their level of cognitive development and not necessarily their mastery of the program competencies.

This research examined the effects of a process of digital video editing used to create multimedia portfolio has on the quality of teacher candidates' critical reflections. The target population was Northwestern Oklahoma State University teacher candidates. Subjects were 22 student teachers in the Fall 2001. Subjects were randomly assigned to one of three groups: control, experimental – reflection, and experimental – reflection with multimedia production. The instrument used to measure the dependent variable, teacher candidate's critical reflections, was based on a 7-part framework developed by Sparks-Langer, Simmons, Pasch, Colton, & Starko (1991).

The data were analyzed using 3 separate t-tests for independent samples. Although the difference between each of the pairs of groups was not significant the large difference between the control group and the experimental group (reflection/video ed) is encouraging.

Digital Video/Multimedia Portfolios as a Tool to Develop Reflective Teacher Candidates

New standards set forth by the International New Teacher Assessment and Support Consortium (INTASC), and the National Council of Accreditation of Teacher Education (NCATE) expect teacher candidates to not only be "reflective practitioners" but also to demonstrate the ability to reflect. According to NCATE, targeted performance indicators for teacher candidates include the ability to "reflect on" and "justify their own practice", "collect data on student learning, and analyze them, reflect on their work, and develop strategies for improving learning", and "work collaboratively with other candidates and clinical faculty to critique and reflect on each others' practice and their effects on student learning with the goal of improving practice." (NCATE, 2001)

Although the usefulness of reflection in teacher education appears to be well established, teacher educators may want to consider the fairness and appropriateness of its use before the conclude its validity and advocate mandating this requirement. Requiring teacher candidates to reflect on their activities may not be "developmentally appropriate".

If reflection is viewed as a form of critical inquiry, then what is asked of teacher candidates may be conceptualized as a metacognitive approach to problem solving. This approach is a systematic technique that can and probably should be taught to teacher candidates. On the other hand, if reflection, as Kitchener (1983) and others (Bowen, 1989; Brabeck, 1984; Mines, 1980) have argued, entails cognitive development and the assumptions a person makes about knowledge, then what teacher educators are assessing in candidates portfolios is their level of cognitive development and not necessarily their mastery of the program competencies. Critical thinking skills may be necessary for the development of higher-level thinking but are not in themselves sufficient to guarantee that development.

The purpose of this research was to examine the effects of a process of digital video editing used to create multimedia portfolio has on the quality of teacher candidates' critical reflections.

The objectives of the study were to:

1. Determine whether teacher candidates' use of digital video editing to create multimedia portfolios has an effect on the development of the candidates' ability to reflect and justify their own practice.
2. Determine whether teacher candidates' use of digital video editing to create multimedia portfolio has an effect on their ability to collect and analyze data on student learning.
3. Determine whether teacher candidates' creation of multimedia portfolios has an effect on their ability to develop strategies to improve learning.

Method

Participants

The target population was Northwestern Oklahoma State University teacher candidates. Subjects were 22 student teachers in the Fall 2001. Subjects were randomly assigned to one of three groups: control, experimental – reflection, and experimental – reflection with multimedia production. Subjects were 4 males and 18 females. The mean GPA for all coursework was 3.239 and the range was from 2.52 to 4.00. The subjects ranged in age from 21 to 48 with a mean age of 27. The students were primarily white, Anglo-Saxon, with only four Native American students and no Hispanic or African American students.

Procedure

During the student teaching seminar course, student teachers met on Thursday to receive instruction in portfolio preparation. Portfolios are a state mandated requirement for certification. The control group received no instruction during the treatment, but rather, worked in the computer lab on their portfolio. The two experimental groups met for a single 1-hour and 45 minute session. Instruction for the group was presented first by

querying students regarding their current understanding of the purpose and process of portfolio development and reflection using a Socratic method of instruction. Particular emphasis was placed on criteria for evaluating reflection. Hatton and Smith (1995) noted that providing candidates with the criteria for evaluating their reflection "may even impose a particular construction of text". We question whether this serves only to create students who appear to be "higher-level-reflectors" rather than actual reflective practioners but perhaps this alone is a significant improvement. This was followed by explicit instruction in reflection using a traditional lecture and question/answer session.

The subjects in the reflection and multimedia production group received field-based (on site) one-on-one instruction in video editing using I-Movie ® editing software. Although this instruction included explicit instruction in the technical aspects (steps) of the process of video editing, the underlying purpose of instruction was to provide what Zeichner (1992) referred to as an "enlightened version of the practicum." This inquiry oriented instruction focused on the process of understanding and improving one's teaching by using video as a tool to facilitate critiquing performance. Teacher candidates in the reflection and multimedia group were encouraged to use editing video of their teaching as a tool to examine multiple perspectives and identify a rationale for alternative solutions (Yost, Sentner, and Forlenza-Bailey, 2000). Teacher candidate's videos served as a stimulus-rich visual/auditory diary of their teaching activities and provided a concrete artifact to aid reflection as candidates engaged in the following "technical skills" related to the process of video editing:

1. Searching for video clips to illustrate specific, pre-determined standards.
2. Verbal description of the teaching episode using the second audio track (voice over).

3. Voice-over reflective comments in which candidates explored: (a) personal reactions to things that happen in the classroom, (b) questions or observations about problems that occur in teaching, (c) descriptions of significant aspects of lessons or school events, and (d) ideas for future analysis/things upon which to take.

Materials

The instrument used to measure the dependent variable, teacher candidate's critical reflections, was based on a 7-part framework developed by Sparks-Langer, Simmons, Pasch, Colton, & Starko (1991):

1. No descriptive language
2. Simple lay person description
3. Events labeled with appropriate terms
4. Explanation with tradition or personal preference given as the rationale
5. Explanation with principle or theory, given as the rationale
6. Explanation with principle, theory, and consideration of other factors given as the rationale
7. Explanation with consideration of ethical, moral, and political issues

Teacher candidates were asked to select the competency they wished to have evaluated. This ultimately would result in candidates being evaluated based on their response to different competencies. Although this might adversely affect the validity of the study we felt that selection of the competency was part of the reflective process and therefore it was essential that candidates be allowed to decide this part as well.

Teacher candidates' written reflections accompanied each artifact in their portfolio. For the purpose of this study, one competency was identified by the candidate for evaluation

using the 7-part framework identified above. All subjects' written reflections for this self-identified competency were examined. Five different raters who were independent of the study assessed reflections. An average rating was computed for each subject. Subjects' ratings in the three groups were analyzed using a t-test for independent samples.

Results

Data was collected during the fall semester and statistical analysis was ran using SPSS in December 2001. The data were analyzed using 3 separate t-tests for independent samples. The first test assessed the difference between the average rater score for Group 1 (control) and Group 2 (reflection). The mean of 63.19 for Group 2 was not significantly larger ($p = .718$) than the mean of Group 1($m = 59.22$). The second test looked for a difference between Group 1 and Group 3 (reflection/video ed). The largest difference was between these 2 groups (Group 1 $m = 59.22$; Group 3 $m = 70.96$) which is what we anticipated. However, the difference was not significant ($p = .17$). The third test assessing the difference between Group 2 ($m = 63.19$) and Group 3 ($m = 70.96$) also found no significant difference ($p = .53$).

Discussion

Although the difference between each of the pairs of groups was not significant the large difference between the control group and the experimental group (reflection/video ed) is encouraging. Discussions among teacher education faculty indicated that many individual professors include instruction on reflection in their courses. Students included in this study may have had unequal amounts of instruction and, therefore, developed varying levels of reflective skills that would tend to skew the results. Also, this study was conducted during the last semester of the candidates'

program and instruction in reflection using video editing was brief. We feel that given more instruction and a longer period of time to use the techniques of video editing in developing the portfolio will likely result in higher reflection scores and thus greater differences between candidates who use the techniques and those who do not. Conversely, the results may support the contention of some researchers (Kitchener, 1983; Bowen, 1989; Brabeck, 1984; Mines, 1980) that what teacher educators are assessing in candidates portfolios is their level of cognitive development and not necessarily their mastery of the program competencies. Nonetheless, this research attempted to answer the imminent question of how technology can make a difference in education. Our hypothesis was that multimedia portfolio development not only will provide a richer format for documenting individual candidate's skills and verifying that state and national standards are met for NCATE folio review, but more importantly, will increase the teacher candidate's critical reflections. If you have ever watched a video of yourself, you most likely found yourself critiquing your performance - in fact, it is almost impossible to avoid reflecting on what you wish you would have done and what you would do differently in the future. This is the art and heart of teacher candidate reflection and multimedia technology as a systematic metacognitive approach to preparing portfolios using video editing methodology can enhance the quality of teacher reflection.

Future Research

We recommend that future research explore whether teacher candidate's creation of multimedia portfolios has an effect on their ability to critique and reflect on each other's practice. Also, it is vital that educators attempt to answer the question of whether the use of technology such as having teacher candidate's create multimedia portfolios has an effect on students' (K-12) learning with the goal of improving practice. Future studies should also take into consideration students level of cognitive development prior to receiving instruction of reflection and monitor the amount and extent of the instruction to determine if the instruction is indeed helpful in producing reflective teachers.

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